

ABSTRACT OF THE DISCLOSURE

A sealed well direct expansion geothermal heat exchange unit, whose sealed well can be placed in ground and/or in water, consisting of a conventional direct expansion, or other heat pump, system wherein the exterior refrigerant heat exchange lines are placed within an insulated and sealed container, which container is supplied with a circulating heat conductive liquid from and to a sub-surface sealed well encasement, which container liquid may be supplemented with heat from a solar heating system, and which unit's hot refrigerant vapor line may be supplementary cooled by means of condensate water evaporative cooling, as well as a means to provide any direct expansion, and any closed-loop water-source, geothermal heat pump system with an optional solar heating supplement in the heating mode, and with an optional water-cooled vapor line supplement in the cooling mode.